# BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF HAWAII

FURLIS UTILITIES COMMON TO THE OZ

In The Matter Of

PUBLIC UTILITIES COMMISSION.

DOCKET NO. 2008-0273

Instituting a Proceeding to Investigate the Implementation of Feed-in Tariffs

# FINAL STATEMENT OF POSITION OF THE HECO COMPANIES AND CONSUMER ADVOCATE

# APPENDIX A

# **AND CERTIFICATE OF SERVICE**

JON S. ITOMURA, ESQ. LANE H. TSUCHIYAMA, ESQ. P.O. BOX 541 HONOLULU, HAWAII 96809

Attorneys for

DIVISION OF CONSUMER ADVOCACY OF THE DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS THOMAS W. WILLIAMS, JR., ESQ.
PETER Y. KIKUTA, ESQ.
DAMON L. SCHMIDT, ESQ.
GOODSILL, ANDERSON QUINN & STIFEL
Alii Place, Suite 1800
1099 Alakea Street
Honolulu, Hawaii 96813

ROD S. AOKI, ESQ. ALCANTAR & KAHL LLP 33 New Montgomery Street Suite 1850 San Francisco, CA 94104

Attorneys for

HAWAIIAN ELECTRIC COMPANY, INC. MAUI ELECTRIC COMPANY, LIMITED HAWAII ELECTRIC LIGHT COMPANY, INC.

# DEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF HAWAII

In The Matter Of

PUBLIC UTILITIES COMMISSION.

DOCKET NO. 2008-0273

Instituting a Proceeding to Investigate the Implementation of Feed-in Tariffs

# FINAL STATEMENT OF POSITION OF THE HECO COMPANIES AND CONSUMER ADVOCATE

Hawaiian Electric Company, Inc. ("HECO") and its subsidiaries Maui Electric Company, Limited ("MECO") and Hawaii Electric Light Company, Inc. ("HELCO") (collectively, the "HECO Companies") and the Division of Consumer Advocacy, Department of Commerce and Consumer Affairs (the "Consumer Advocate"), herein provide their Final Statement of Position Regarding Feed-in Tariff Designs, Policies, and Specific Pricing Proposals ("Final SOP"). The Final SOP is submitted pursuant to the Commission's Order Approving the HECO Companies' Proposed Procedural Order, as Modified, filed on January 20, 2009.

### I. INTRODUCTION

As elaborated in the Hawaii Clean Energy Initiative (HCEI) Agreement<sup>2</sup>, feed-in tariffs (FITs) provide a mechanism to stimulate renewable energy development by providing

This Final SOP supplements and incorporates by reference the Joint Proposal on Feed-In Tariffs of the HECO Companies and Consumer Advocate, including the HECO Feed-in Tariff Program Plan ("KEMA Report"), filed on December 23, 2008 ("FIT Proposal" or "Joint Proposal").

On October 20, 2008, the Governor of the State of Hawaii, the State Department of Business Economic Development and Tourism (DBEDT), the Consumer Advocate and the HECO Companies entered into a comprehensive agreement ("HCEI Agreement") designed to move the State away from its dependence on imported fossil fuels for electricity and ground transportation, and toward "indigenously produced renewable energy and an

predictability and certainty with respect to the future prices to be paid for renewable energy. The HCEI Agreement also states the following:

As we move from central-station, oil-based firm power to a much more renewable and distributed and intermittent powered system, we accept that the operating risks of the Hawaiian Electric Companies will increase which may potentially affect customers. Thus, we recognize the need to assure that Hawaii preserves a stable electric grid to minimize disruption to service quality and reliability. In addition, we recognize the need for a financially sound electric utility. Both are vital components for our achievement of an independent renewable energy future.

We commit to take steps to reduce the demand for electricity and increase the efficiency of energy that we do use both to reduce the costs to the public and to reduce the level of electrical generation. At the same time, we recognize that a system of utility regulation will be needed to assure that Hawaii preserves a stable electric grid and a financially sound electric utility as vital components of our renewable energy future.

Accordingly, in drafting the FIT Proposal, the HECO Companies and Consumer Advocate recognized and incorporated the following key policy objectives:

- Accelerate the addition of renewable energy from new sources and maximize renewable penetration, taking into account differences between the islands
- Maintain system reliability, grid stability and safety standards
- Minimize policy costs to ratepayers
- Complement existing Hawaii policy framework as much as possible and target gaps in current renewable energy policy framework
- Stabilize electric rates over time
- Provide predictability and certainty
- Strive for policy simplicity as much as possible.

The FIT Proposal is intended to expand renewable energy capacity through the setting of rates at the cost of technology plus a reasonable profit. The FIT Proposal will also delink costs paid to generators from avoided cost which is also a goal of the HCEI Agreement.

There is no question that Hawaii is unique in many ways. Our dependence on oil has led our State to consider incorporating renewable energy resources in ways that few places in the world have even contemplated much less attempted. As delineated in the HCEI Agreement, the HECO Companies have committed themselves to incorporating hundreds of megawatts of renewable energy on to our island systems. Some will come through projects the HECO Companies are already working with. Some will come through the Oahu RFP, other competitive bidding processes and individually negotiated projects. Some will come through the biofueling of the existing generating units of the HECO Companies. And some will come through the FIT process. Each has its place and role to move the State away from its dependence on imported fossil fuels for electricity. None should be seen as the sole path, and none should be used to fill in the space best occupied by a different process.

This docket is an investigation of the possible implementation of FITs in Hawaii. Feed-in tariffs are designed to provide an expedited process for new renewable resources to come on-line through the establishment of standard form contracts with set pricing. Accordingly, feed-in tariffs work best for those resources and projects for which a standardized process makes sense. In Hawaii, Photovoltaic (PV) projects of certain manageable sizes are perhaps the classic resource to which a FIT would apply. This is because the pricing issues, interconnection issues, and necessary contract terms and conditions associated with such PV resources are each and all amenable to standardization. For other types of resources, and for resources of larger sizes, standardization (the hallmark of the FIT process) would be difficult at best in Hawaii. For

example, in any case where full-scale interconnection requirements studies are needed, a FIT process is simply the inappropriate vehicle.<sup>3</sup>

There are other key ways in which Hawaii is unique. The Hawaii "grid" is comprised of six separate and independent island systems. Each of these island systems must stand on their own and ensure system reliability and power quality based solely upon the resources and load present on each island. Unlike much larger interconnected and integrated systems in the mainland United States, Canada and Europe, these very small island systems do not enjoy the flexibility that comes with being able to import power from a neighboring utility, state, province or country when suffering a shortage or export power when there is an excess. The Hawaii systems are literally and figuratively "islanded." Figures 1 through 5 of Appendix A illustrate the fundamental differences between the Hawaii grid and those of other jurisdictions.

The practical result of the Hawaii electric utility systems not being interconnected and serving much smaller loads is that the Hawaii island grids are not very forgiving of unexpected or unplanned system resource additions especially if the resource energy is to be designated as must-take. The need to maintain reliability and power quality based solely upon the resources and load on each island means that the operating characteristics of a particular resource, the size of that resource, the location of the resource (both geographically and in relation to the existing transmission and distribution infrastructure) and when the resource will come on-line are all

In order to achieve the State's renewable energy objectives as a whole, the State should avail itself of the many different tools it has available. These would include third-party administration of EE programs, utility RFPs for as-available energy, RFPs for firm capacity, direct one-on-one negotiations for power purchases, utility programs such as the FIT, PV Host program and others. Each of these "tools" serves a different function, with their unique characteristics. It's not that one tool is superior to the other. Like a hammer, screwdriver, and a saw in a toolbox, each has a role to play in the successful acquisition of new renewables for the electric grid and in meeting the State's RPS requirements, GHG targets, and the reduction of fossil fuel imports while providing power in the predictable, reliable, responsible and safe manner that Hawaii's economy depends on. Just as one would not use a hammer to cut a board. FITs should be designed around the right types and sizes of renewable projects that can "fit" within a properly designed FIT program.

critical to the utility's ability to appropriately integrate that resource and operate the system. It is against this factual backdrop, that the Hawaii island systems do not have the options that virtually every other major electrical grid in the world has, that any procurement mechanism such as a FIT must be designed.

In the case of renewable resources, there is an additional factor which must be considered in designing a procurement program – the fact that the HECO Companies, in particular the HELCO and MECO systems, already have some of the highest penetrations of intermittent renewable resources in the world. Unlike other national or international grid systems which do not have to or are just beginning to address the integration issues which arise as more intermittent resources are accepted on their systems, the HECO Companies are recognized as a global leader in these efforts due to the high levels of existing intermittent resources and the commitments to take on additional intermittent resources in the near future. As levels of intermittent renewable resources rise, it becomes more and more difficult to integrate these types of resources and efficiently operate an island grid. Moreover, it must be recognized that operational changes which may be utilized by the operators of larger interconnected grids to manage high penetrations of variable generation, such as leveraging wind forecasting across geographic areas to reduce forecasting error impacts, and increasing the size of balancing areas, are not applicable to the island systems. Figures 6 and 7 of Appendix A illustrate the relative amount of installed wind for HELCO and MECO as compared to other systems with high levels of wind penetration.

The Commission's December 11, 2008 paper entitled "Feed-In Tariffs: Best Design Focusing Hawaii's Investigation" ("Scoping Paper"), provides the parties with important guidance in establishing a FIT

Hawaii's geography, electricity infrastructure, retail electricity prices, and general economic conditions set it apart from any other state. The parties must always keep in mind challenges such as high retail electricity prices, the importance of preserving the environment, the lack of interconnectivity between the islands, and challenges concerning the location of generating resources and load when responding to the Commission in this investigation.

# (Scoping Paper at 9)

Moreover, the Scoping Paper expressly notes that:

Hawaii already has other mechanisms in place that are designed to encourage the development of renewable resources, including in part: a renewable portfolio standard, the requirement that utilities purchase electricity from qualifying facilities at avoided cost in compliance with PURPA, net metering for smaller renewable installations, high retail rates and competitive bidding programs for renewable resources.

# (Scoping Paper at 4)

Taken together, the Scoping Paper recognizes and to an extent establishes several fundamental premises of any FIT for Hawaii which are that the FIT design must: (1) account for Hawaii's unique geography and the fact that Hawaii's electric system is comprised of a series of island systems which are not interconnected; (2) be cost effective for ratepayers; (3) appropriately consider and respect environmental issues; (4) ensure the operational integrity of each island system and sustain reliability; and (5) recognize that a FIT is but one mechanism to facilitate increased renewable energy for the State among a number of well-established mechanisms.

Consequently, and in consideration of the foregoing, there are three fundamental principles which must be considered in the design of a renewable resource procurement program, in particular a FIT:

A. A FIT should be designed to do what it does best, encourage the development of new renewable resources through standardized rates, terms and conditions, in

- conjunction and collaboration with the utilities' other power procurement mechanisms.
- B. The FIT design must not jeopardize system reliability and power quality.
- C. The benefits to be achieved by the Program must be appropriately balanced against the costs to ratepayers both short term and long term.

The Joint Proposal filed on December 23, 2008 by the HECO Companies and the Consumer Advocate ("FIT Proposal") affirmatively addresses and incorporates each of these central directives and design considerations.

### II. DISCUSSION

- A. A FIT Should Be Designed To Do What It Does Best -- Encourage The Development Of New Renewable Resources Through Standardized Rates, Terms And Conditions, In Conjunction And Collaboration With The Utilities' Other Power Procurement Mechanisms.
  - 1. The FIT Proposal Is Designed To Stimulate Renewable Energy Development By Providing Predictability And Certainty Through Standardized Contract Pricing, Terms And Conditions.

A FIT is generally defined as an offering of a fixed-price contract over a specified term with specified operating conditions to eligible renewable energy generators. A FIT is best suited for renewable energy projects that lend themselves to the use of standardized energy payment rates and power purchase contract terms and conditions, and which can be developed and interconnected to the utility grid in a relatively predictable and systematic manner. Specifically, a FIT should allow an eligible project developer to easily review and accept the FIT rate and contract terms without the need for extensive studies or the customized negotiation of project specific terms required for larger projects or more experimental resource types. A FIT is not the

KEMA Exploring Feed-in Tariffs for California. California Energy Commission. Publication No. CEC-00-2008-003-D. Page 4.

best vehicle for procurement of resources which have unique interconnection, fuel or other terms which must be evaluated separately and apart from a standardized FIT agreement.

The Commission's Scoping Paper provides explicit guidance on how best to integrate various renewable technologies into a FIT program. Specifically, the Scoping Paper recognizes that "the goal of the PBFiT is to encourage the development of <u>certain</u> resources." (Scoping Paper at 12)(emphasis supplied). The Scoping Paper expressly recommends:

With probably over a dozen different technologies, some of which require further segmentation by size or location, the number of PBFiTs needed is large. The Commission may wish to focus on PBFiTs that merit priority attention based upon the projects under consideration, or that might be more likely candidates for consideration based upon the existence of a reasonable PBFiT.

(Id.)

The HECO Companies and the Consumer Advocate agree that initially, the FIT should target those technologies that are actively being developed in Hawaii, and on project types and sizes that are more straightforward to implement and lend themselves to use of standardized energy rates and power purchase contracting. Focusing on these resources will allow the Commission and stakeholders to more readily develop the initial FIT. The HECO Companies and the Consumer Advocate stress that the FIT should be regularly reviewed to encompass more technologies, and propose to do so within two years of the initial FIT, with ongoing reviews as part of the Clean Energy Scenario Planning (CESP) process.

As discussed herein, the proposed FIT <u>initially</u> targets renewable resources that:

(1) Do not require complex environmental and land use permitting which may impose significant uncertainties in project development timeframes and costs. This primarily refers to environmental permits and review processes including HRS §343 environmental assessments and impact statements, covered source air permitting, and changes in zoning. Each of these processes

requires significant time and resources, and approval is at the discretion of the permitting or review agency. Furthermore, potentially costly project modifications may be required by the reviewing agency, which could significantly impact project economics and timing.

- (2) Do not typically, by virtue of their operating characteristics and size relative to the utility system, require extensive and lengthy interconnection studies or the need for significant interconnection requirements. This refers to the fact that larger generator sizes and certain technologies will inherently increase the potential for utility grid impacts, and may require more extensive technical review and requirements to safely and reliably interconnect to the utility grid. For example, larger, "central station" generating resources must go through a complex interconnection requirements study ("IRS"). Even "distributed generation" resources interconnecting into distribution circuits may trigger the need for more extensive studies and interconnection requirements. As discussed more fully herein, the proposed FIT adopts the HECO Companies' Interconnection Tariff Rule 14.H to ensure that safety and reliability are not compromised. One of the critical technical issues is the aggregate penetration of generation resources on a distribution circuit. In Rule 14.H, a more extensive interconnection study may be triggered if the aggregate penetration of generation resources on a circuit exceeds 10% of the circuit peak load.
- (3) Have existing or proposed projects utilizing the same technology which have already addressed complex financial accounting issues relative to utility power purchase contracts. This criterion addresses the fact that complex utility accounting issues must be addressed for each type of long-term arrangement the utility enters into. Considerations in the accounting assessments include: the type of fuel source (i.e. sun, wind, waves, biomass), the maturity of the technology, the reliability of the technology, the structure of the payments (i.e. per

kWh delivered, per kW available, penalties, bonuses), and the nature of the contract (i.e. firm, asavailable, scheduled, etc.). These accounting issues have been addressed for existing and proposed purchased power agreements and certain accounting conclusions are reasonably applied broadly to certain technologies. For example, as-available PV and as-available wind purchased power agreements to date have not resulted in capital lease obligations being recorded on the utility's financial statements. Other technologies which have other characteristics might result in different accounting conclusions. Arrangements which reflect a contract for use of the asset may result in different accounting treatment (e.g. a capital lease obligation being recorded), which may have different financial consequences to the utility. For example, an arrangement that results in a capital lease may impact the financial structure (i.e. debt/total capitalization ratio) of the utility, which could have an impact on the utility's cost of capital. These accounting issues will ultimately be resolved in the course of other Commission proceedings or processes, but the timing of such may not support the desired timeframe to adopt an initial FIT.

(4) Have already been, or are currently in the process of being, implemented in Hawaii in commercial (non-R&D) application. It is the desire of the HECO Companies and the Consumer Advocate to initially prioritize those technologies for which there is already a high degree of demonstrated market desire and development experience in Hawaii. This would be followed shortly thereafter in the first FIT Update by technologies that have been installed elsewhere but have high potential in Hawaii. This is a reasonable approach since the process of establishing reasonable pricing for technologies that are unproven or for which there has been no commercial experience in Hawaii will require more data gathering and consideration.

As discussed in the Scoping Paper:

In developing the cost support for a PBFiT, a regulator should examine typical costs and operating characteristics for that type of project, rather than the costs and characteristic of a single particular project using that technology. PBFiTs are meant to encourage reasonable projects (i.e., those that are at least as cost-effective as the typical project) rather than any project regardless of its costs. All cost and operating estimations should, however, be Hawaii-specific to the extent that Hawaii's unique geography affects cost.

(Scoping Paper at 6)(emphasis supplied)

Applying the criteria above, the HECO Companies and the Consumer Advocate propose that the initial FIT be focused on PV, CSP, in-line hydropower, and wind (with possible consideration of additional technologies such as biomass or biogas to the extent that information to support inclusion of such projects is provided during the course of this proceeding), with individual project sizes targeted to provide a greater likelihood of more straightforward interconnection, project implementation and use of standardized energy rates and power purchase contracting. Recognizing that the Commission's December 11, 2008 letter directs the parties to this proceeding to submit cost information for a variety of technologies, it is possible that sufficient information will be provided via this directive that additional technologies may be included in the initial FIT.

2. The FIT Proposal Is Designed To Be Complementary To The State's Other Distributed Generation Programs And Is Not A Mutually Exclusive Policy Mechanism.

As recognized by the Commission, a feed-in tariff will join an array of existing legislative and regulatory initiatives to boost production of renewables in Hawaii. Those initiatives include PURPA, the renewable portfolio standard, net metering and various distributed generation actions. As discussed in the Commission's Scoping Paper:

Hawaii already has other mechanisms in place that are designed to encourage the development of renewable resources, including in part: a renewable portfolio standard, the requirement that utilities purchase electricity from qualifying

facilities at avoided cost in compliance with PURPA, net metering for smaller renewable installations, high retail rates and competitive bidding programs for renewable resources.

# (Scoping Paper at 4)

The FIT Proposal provides a mechanism which complements and supplements the programs already in place to encourage the development of renewable resources in Hawaii which are illustrated at a high level in the following chart:

| Size/Program<br>Status | 100 kW or<br>Less   | 500 kW or<br>Less  | 500 kW to 1<br>MW  | 1 MW up to<br>Competitive<br>Bidding<br>Framework<br>Limits    | Greater than or<br>Equal to 5 MW<br>(Oahu) or 2.7<br>MW (Maui and<br>Big Island)          |
|------------------------|---|--|--|--|---|
| Existing               | Schedule Q,<br>NEM, or<br>Bilateral<br>Negotiation<br>and<br>Purchase<br>Power<br>Agreement | Bilateral<br>Negotiation<br>and Purchase<br>Power<br>Agreement | Bilateral<br>Negotiation<br>and Purchase<br>Power<br>Agreement | Bilateral<br>Negotiation<br>and Purchase<br>Power<br>Agreement | Competitive Bid (RFP), Waiver from Competitive Bidding Framework or Bilateral Negotiation |
| Proposed For<br>HECO   | NEM or<br>Feed-in<br>Tariff (PV,<br>CSP, Wind,<br>In-Line<br>Hydro) <sup>56</sup>           | Feed-in<br>Tariff (PV,<br>CSP)                                 | PV Host<br>Program <sup>7</sup>                                | Competitive<br>Bid (RFP) or<br>Bilateral<br>Negotiation        | Competitive Bid (RFP), Waiver from Competitive Bidding Framework or                       |

Bilateral negotiations and power purchase agreements remain available options for project developers however are not intended as the primary procurement mechanism where an alternative procurement program is available.

|                                   |   |  |  |  | Bilateral<br>Negotiation   |
|-----------------------------------|---|--|--|--|--|
| Proposed for<br>MECO and<br>HELCO | NEM or<br>Feed-in<br>Tariff (PV,<br>CSP, Wind,<br>In-Line<br>Hydro) | Feed-in Tariff (PV up to 250 kW), (CSP); PV Host (250 kW up to 500 kW) | Competitive<br>Bid (RFP or<br>Bilateral<br>Negotiation | Competitive<br>Bid (RFP or<br>Bilateral<br>Negotiation | Competitive Bid<br>(RFP), Waiver<br>from<br>Competitive<br>Bidding<br>Framework or<br>Bilateral<br>Negotiation |

The State's RPS calls for each electric utility company to procure 20 percent of its net electricity sales from renewable electrical energy by 2020, with interim stepping stones of 10 percent by 2010 and 15 percent by 2015. The recently signed HCEI Agreement would require an increase in the RPS target to 40 percent by 2030, and a requirement that energy efficiency and renewable displacement technologies no longer be eligible for RPS compliance starting in 2014. The FIT proposal would provide another significant policy tool for meeting RPS targets under these new parameters.

The Public Utility Regulatory Policies Act of 1978 (PURPA) encourages the development of independent, nonutility cogeneration and small power projects. Title 6, Chapter 74 of the Hawaii Administrative Rules sets forth the rigorous standards to qualify as a

As discussed in Section II.B.3 the HECO Companies would consider additional technologies for the initial FIT, such as biomass or biogas technologies, to the extent that information justifying such projects is provided during the course of this proceeding.

The HECO Companies' to be filed PV Host Program is currently contemplated to include projects from 500 kW to 1 MW on Oahu and 250 kW to 500 kW on Maui and the Big Island.

cogeneration or small power production facility in Hawaii and does not restrict the energy source for these facilities solely to renewable resources.<sup>8</sup>

The Company's NEM program was originally available to eligible customer-generators with a capacity of not more than 50 kilowatts until the total rated generating capacity of eligible customers equals 0.5 percent of the electric utility's system peak demand. Through subsequent agreements approved by the Commission, the maximum size of the eligible customer-generator that can qualify for a NEM agreement was increased to 100 kW and the NEM system cap was also increased. Through the HCEI Agreement, the HECO Companies and the Consumer Advocate proposed that no applications for new NEM contracts would be accepted once the FIT is formally made available to customers (targeted for July, 2009). All NEM systems under contract, or contracts in the process of utility review at the time the FIT is formally made available to customers, would be grandfathered and such grandfathering would apply for the life of the net energy metered system. Based upon discussions during the course of this proceeding, the HECO Companies and Consumer Advocate propose that the NEM program, as described in Section 19 of the HCEI Agreement, should be offered until the first FIT Update discussed herein is completed, two years after FIT implementation.

Finally, the Framework for Competitive Bidding will remain unchanged. The targeted project sizes of the FIT Proposal are less than the minimum project size thresholds of the Commission's Framework for Competitive Bidding, adopted December 8, 2006 in Docket No. 03-0372. The Framework for Competitive Bidding does not apply to generating units with a net output available to the utility of 1% or less of a utility's total firm capacity, including that of

A qualifying small power production facility may use oil, natural gas, or coal to the extent that the use of these resources by a facility does not, in the aggregate, exceed twenty-five per cent of the total energy input of the facility during any calendar year period. (H.A.R. Sec. 6-74-5 (e)(2).

independent power producers, or with a net output of 5 MW or less, whichever is lower. (Framework for Competitive Bidding, page 5)

Accordingly, the FIT program would be complementary to and/or supplement the State's RPS, implementation of PURPA, NEM and other distributed generation programs rather than constitute a mutually exclusive policy mechanism. As elaborated in the HCEI Agreement, FITs provide a mechanism to stimulate renewable energy development by providing predictability and certainty with respect to the future prices to be paid for renewable energy.

# 3. Contract Terms Of Twenty (20) Years

Through the FIT Proposal the HECO Companies and Consumer Advocate stated that the term of FIT contracts for new resources should be no longer than industry-standard assumptions on service life for a particular technology. Pursuant to agreement reached during the March 18-19, 2009 technical conference and settlement discussions, the Parties agree that the standard term for a Schedule FIT Agreement should be 20 years for all eligible renewable resources provided that appropriate evidence is presented to support this length of term as consistent with the average expected life of each eligible resource. Following the initial term, projects should be allowed to extend their contracts on a year-by-year basis subject to a revised FIT energy rate appropriate for the specific project circumstance, considering among other factors the remaining useful life of the system (if any), and the FIT energy payment rates in effect at the time. The utility should not be obligated to purchase any energy if the FIT contract expires and is not renewed. (See KEMA Report, page 33, Sec 3.9)

4. Provisions Of The HCEI Agreement Designed To Facilitate Long Term Purchased Power Contracting Provide An Appropriate Mechanism To Address Investor Risk Associated With A FIT Program.

Long term purchased power agreements such as have been proposed in the FIT Proposal will impact the credit quality of the utility entering into the contracts. Generally, there are three ways that any PPA may affect the utility's financial profile: 1) imputed debt treatment of the PPA, 2) a capital lease obligation reflected as debt on the utility's financial statements, and 3) consolidation of the seller (including the seller's debt) on the utility's financial statements. The HECO Companies would not enter into any agreement which would result in consolidation due to the significant adverse credit quality and financial reporting compliance issues associated with consolidation.

It is anticipated that the power purchase agreements under the FIT will increase imputed debt or possibly result in capital lease obligations (i.e. increase actual debt). Both imputed debt and capital lease obligations negatively impact the financial profile of the utility. The increase in imputed debt or capital lease obligations increases financial risk and consume utility borrowing capacity. Over the long term, this negatively impacts all stakeholders. Developers rely on having contracts with credit worthy off-takers in order to finance their projects. Customers rely on a credit worthy utility to maintain reliable service.

Parties to the HCEI Agreement process, other than the HECO Companies and Consumer Advocate, proposed that 10% of the utility's purchases under any FIT PPA should be included in the utility's rate base through 2015 as a means of restoring the financial profile of the utility and to enable it to undertake the FIT. The intent of the proposed rate base treatment was to address investor risks associated with imputed (or actual) debt. The incremental compensation is not readily quantified and correlated to the incremental risk. Solely for illustrative purposes however, a hypothetical 20 MW of FIT purchases at 20% capacity factor at 25¢/kwh would result in \$8,760,000 in annual energy purchases. That would translate to \$876,000 in rate base (10%).

If the utility cost of capital grossed-up for revenue and income taxes were 14%, \$876,000 in rate base would be roughly \$120,000 in revenue requirements and roughly \$70,000 in net income after taxes. Twenty years of 20 MW of as-available, all-in priced energy at 25% risk factor would result in imputed debt of approximately \$1,200,000. (See discussion of computation of imputed debt in Docket No. 2008-0083, T-20, pp. 34-35 and HECO-2013.) In this hypothetical illustration, \$70,000 (through January 2015) would be intended to compensate investors for having the additional risk of \$1,200,000 in imputed debt (which will decline over a 20 year term).

The impact of financial degradation resulting from imputed debt of a FIT program with no return on purchased power expense is likewise not quantifiable. While the amount of estimated imputed debt associated with a FIT may appear relatively small relative to the utility's balance sheet in total, this imputed debt is in addition to numerous other sources of imputed debt resulting in part from the utility's other procurement programs. In addition to the existing imputed debt, the utility foresees rising imputed debt and potentially actual debt resulting from new purchased power, leasing arrangements, and other purchase obligations. Theoretically, credit quality degradation increases the cost of capital over the long-term.

Historically, the utility has addressed the imputed debt issue by decreasing its actual debt and increasing its proportion of equity. In the hypothetical illustration discussed above, the estimated revenue requirement impact of replacing proportionate amounts of actual debt with equity to maintain capitalization ratios for \$1,200,000 of imputed debt would be approximately \$80,000 (which in theory would decline over a 20 year term correlating to the amount of imputed debt). In the hypothetical example, the revenue requirement of rate base treatment is \$120,000 for the period through 2015 only, while the cost of rebalancing is \$80,000 over the 20 year term.

The utility does note, however, that it is limited in its ability to restore financial ratios to maintain credit quality by increasing the proportion of equity in its capital structure to offset the imputed debt. The HECO Companies view the proposed rate base treatment as an alternative means of addressing the growing risks of long-term purchase obligations.

# B. The FIT Design Must Not Jeopardize System Reliability And Power Quality.

The parties to the HCEI Agreement agree that feed-in tariffs are "beneficial for the development of renewable energy because they provide predictability and certainty with respect to the future prices to be paid for renewable energy and how much of such energy the utility will acquire." (HCEI Agreement at 16). The procurement of increased levels of renewable energy should not come at the expense of negative impacts to system reliability or power quality for either existing and future customers of the utilities or the new renewable resources which depend upon a reliable system in order to appropriately deliver the power they produce. Recognizing this important consideration, the parties to the HCEI Agreement expressly noted that the "best design for feed-in tariffs that support the Hawaii Clean Energy Initiative" will consider such factors as "locational limits for projects qualifying for the feed-in tariff terms ... and the terms, conditions, and duration of the feed-in tariff that shall be offered to all qualifying renewable projects...." (HCEI Agreement at 17)

1. The Commission Should Approve Appropriate Limits on Project Size, and System Penetration To Insure Reliability And Power Quality As New FIT Resources Are Integrated To The Island Grids.

One of the greatest threats to system reliability and power quality is uncertainty regarding the addition of new resources onto an island grid. One way to reduce the level of uncertainty is to set certain reasonable limits upon the size and system penetration of FIT resources during a

particular period of time. In this way, a system operator can have at least some ability to forecast the size of resource that will come onto the grid through a FIT and the maximum amount of that resource that can be expected during a given defined period of time. Appropriate limits are consistent with the directives contained in the Commission's Scoping Paper:

Overall caps on the amount of electricity purchased under PBFiTs are reasonable to consider, as the above-market price paid for electricity under a PBFiT places upward pressure on the retail price for electricity. \*\*\* A regulator may want to consider the total impact the Clean Energy Infrastructure Surcharge (CEIS) has on retail rates, not just the impact of the PBFiT purchases when setting a cap. Caps could be set so that when a utility meets its RPS goal, PBFiTs are not available to additional projects. Caps can also be placed on installed capacity, expected production, or rate impact (e.g., the difference between the purchased cost made under a PBFiT rate and an avoided-cost rate compared to total retail revenues).

# (Scoping Paper at 8)(Emphasis supplied)

The need for reasonable limits is perhaps best illustrated in answer to a common question raised in this proceeding: "what is the limit?" The answer to this question is dependent upon any number of technical factors including but not limited to: (1) the island grid system which the resource is being integrated with; (2) the existing level of penetration of renewable resources on that system and the system's ability to accept more of a particular resource; (3) the type of resource and the operational characteristics of that resource; (4) the size of that resource and the expected deliveries to the system; (5) the location of that resource both geographically and in relation to existing distribution and transmission infrastructure; (6) the ability of that particular infrastructure to reliably accept the new resource; and (7) how renewable resources are being integrated from each and all of the utilities' other renewable resource procurement mechanisms and initiatives.

The following brief examples assist in illustrating the point: (1) addition of multiple 250 kW PV resource on unconstrained portions of the HECO distribution system may not have any significant impact upon HECO system reliability while addition of those same resources to an already constrained HELCO system may raise significant operational concerns which would have to be remedied, to the extent possible, either through the addition of costly grid infrastructure or operational actions to attempt to manage the new resource (also at a potential cost if other less costly renewable resources must be curtailed or more expensive resources dispatched as part of the grid management process); (2) addition of a significant amount of intermittent wind resources in a particular location on the system may result in the utility not being able to accept any additional intermittent generation at that location; and (3) the addition of a resource which could provide grid benefits (dispatchable, load following and able to provide ancillary services as an example) could be accepted at a particular location on the HELCO system, whereas a variable generation resource could result in unacceptable system impacts because it is non-dispatchable and would likely contribute to existing balancing issues on the HELCO system resulting from existing variable generation projects.

Accordingly, in an attempt to reduce the uncertainty associated with a FIT program without limits of any kind, the FIT Proposal sets reasonable project size targets for those resources initially eligible for the FIT. The proposed limits, developed in consideration of the technical factors discussed above, would allow for the largest number of individual projects (rather than the entire eligible capacity being taken up by a single project) while also facilitating the ability to offer standardized pricing, terms and conditions and interconnection requirements which would not be available for other types of resources and project sizes due to the complexities and uncertainties that would be associated with the interconnection and integration

of those types of resources onto the Hawaii island grids.

The <u>initial</u> target project sizes, which are also supported by current market activity and consistent with other regulatory mechanisms and initiatives, are as follows:

- a. Photovoltaic ("PV") systems up to and including 500 kW<sup>9</sup> in size on Oahu, PV systems up to and including 250 kW<sup>10</sup> on Maui and Hawaii Island, and PV systems up to and including 100 kW<sup>11</sup> in size on Lanai and Molokai. Further differentiation is made between residential/small commercial PV.
- Concentrated solar power ("CSP") systems up to and including 500 kW<sup>12</sup>in size on Oahu, Maui, and Hawaii Island.
- c. In-line hydropower systems up to and including 100 kW<sup>13</sup> in size on Oahu, Maui, Lanai, Molokai, and Hawaii Island.
- Wind power systems up to and including 100 kW<sup>14</sup> in size on Oahu, Maui, Lanai, Molokai, and Hawaii Island.
- 2. Reasonable Limits Are Supported By The Current Technical Requirements And Constraints On Each Island System.

As touched on briefly above, the attributes of intermittent or variable renewable generation that impact the reliability of the power system are:

 Variability: the amount of change according to the availability of the primary energy source (wind, sunlight and water motion) resulting in increased

22

Throughout this document, "kW" means kilowatts alternating current net to grid. The 500 kW figure is consistent with the upper range of the NEM Pilot. The larger size on Oahu recognizes that there will be fewer cumulative system impacts on the HECO grid compared to the other islands. Additional interconnection requirements may still apply such as SCADA and DTT.

Rule 14.H allows for expedited review of systems up to this size provided feeder penetration is not greater than 10%. If penetration is above this, then additional interconnection requirements may apply such as SCADA and DTT.

The lower figure is due to the much smaller grids on these islands. This is also consistent with existing Schedule Q levels.

This is based upon the size of a system currently being installed on the Big Island.

This is consistent with Schedule Q.

This is consistent with Schedule O.

- fluctuations in the plant output on all time scales
- Uncertainty: the ability to forecast the magnitude, timing, and duration of variable generation

Reliable system operation requires balancing of supply and demand at every moment in time, in accordance with prevailing operating criteria. The measure of successful power balancing on the Hawaii power systems is the system frequency. There is a certain amount of variability and uncertainty generally in system demand and, to a lesser extent, with conventional generation. However, large scale integration of variable generation significantly alters familiar patterns for the system. Even for larger variable resources which can have enhanced control features (such as ramp control, or curtailment control) these resources are not fully dispatchable, and therefore require use of other controllable or dispatchable resources to balance the supply and demand. Thus, as all intermittent, variable generation adds to the power imbalance, there is almost always an impact on reliability through the increased balancing error that will result from the addition. In addition to creating an imbalance on the power system, if operational practices allow the variable generation to displace some of the dispatchable generators from the system, complications increase due to the loss of the response capabilities from the dispatchable generation.

The amount of variable generation that can be accepted on a power system is ultimately dependent upon various factors such as:

- the characteristics of the variable generation such as rate of change, correlation
  with other resources, degree of possible change in a given time period,
  predictability of output, control capabilities, etc.
- the characteristics of the other controllable or dispatchable resources such as

- available ramp rate, frequency response, minimum load, startup time, etc.
- the minimum number of conventional generators which are necessary to provide for the reliable operation of the power system: as necessary to survive reasonably probable faults and disturbances, ability to regulate voltages, perform load balancing and frequency control
- operational configuration to mitigate reliability impacts and their costs, for example, the inclusion of increased reserves (minimizing displacement of dispatchable units)
- evaluation of possible technical solutions and their costs such as supplemental controls on the variable generation, modification of the dispatchable generation, infrastructure modifications
- Establishing minimum reliability criteria to be maintained on the power system

  An additional challenge in evaluating these factors is that planning tools have not been
  developed to accurately capture the impacts of these types of resources on the power system.

  There are challenges in all planning time frames: difficulty in obtaining models for these
  resources for dynamic stability; lack of tools to capture the effect of the resources in the subhour time frame on system balancing and frequency control coupled with lack of accurate data
  regarding the behavior of these resources in the intra-hour time frame; and lack of historical
  information and forecasts to use for hourly production assumptions of intermittent resources to
  include in long range, month ahead and year ahead forecasts.

Due to these complexities, the actual operating experience from areas of high levels of variable generation is very valuable to provide insights into the reliability and operational impacts of intermittent, variable resources. This experience shows that relatively small amounts

of variable generation can typically be accommodated with minor impact on system operation. However, as the levels increase, the challenges become much more costly and difficult to solve. These experiences are influenced strongly by the factors listed above: for example, systems where variable generation is highly correlated due to clustering of wind plants or a correlation of outputs from solar and wind facilities have had greater impacts on reliability than systems where the production is more dispersed. As discussed above, the island grids in Hawaii have fewer options than interconnected systems, due to the limited geographical area and isolation of the grids.

For example, the HELCO power system has significant variable generation in its generation mix, provided from wind, run-of-river hydroelectric, and most recently, distributed PV generation. This provides a good basis to evaluate the relative impacts of these energy sources on the power system.

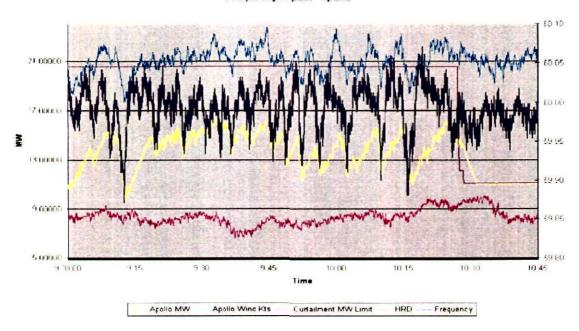
The impact of the hydroelectric resources on reliability, although non-dispatchable, has been minimal. This is because the output of these facilities is relatively constant. During periods of rain, the output will increase steadily, and during dry periods, the output will decrease steadily. These resources are not extremely variable and are fairly predictable, and thus do not contribute to balancing error on a minute-to-minute and hour-to-hour time scale. The most significant impact on reliability from these hydroelectric resources is the displacement of dispatchable resources which are more responsive during system disturbances.

By contrast, the impact of wind energy on the HELCO system has been very significant because the output varies on the second-to-second and minute-to-minute time scale. The output of each wind plant can decline from full output to zero in a very short time period. The addition of the HRD wind plant (10.5 MW) resulted in a measurable increase in average frequency error

and required modification of the Automatic Generation Control system. The impacts of this wind plant on frequency control and load balancing is documented in the report: *EPRI Evaluation of the Effectiveness of AGC Alterations for Improved Control with Significant Wind Generation. EPRI, Palo Alto, CA: 2007. 1018715.* The addition of a second wind plant, the 20.5 Pakini Nui facility at the South part of Hawaii Island, had significant additional impact on frequency control. Wind plant variability has become the primary driver for frequency error on the HELCO system. A statistical analysis of these impacts, discussion of specific events and possible mitigation measures are documented in the report: *Evaluation of the Impacts of Wind Generation on HELCO AGC and System Performance – Phase 2. EPRI Palo Alto, CA: 2009. 101876.* 

The reliability impact of these wind resources has been significant on two time scales. In the fast time scale, second-to-second variations required the control dead band on frequency to be expanded to avoid exacerbation of error through supplemental control actions by AGC. During off-peak conditions this dead band is approximately +/0.2 Hz, an amount of frequency error considered an emergency and alarmed to the operator. This variability is illustrated in the following figure:

#### Frequency Impact - Apollo

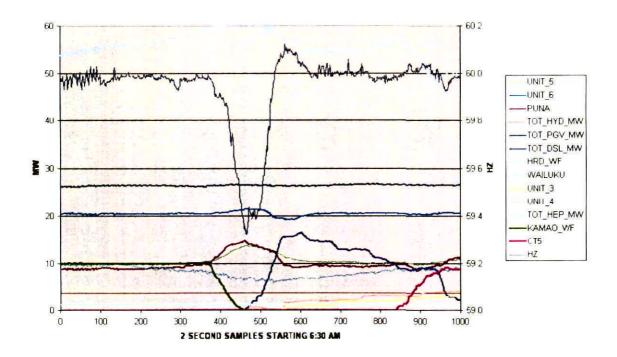


## Figure 1

In this example, the influence of the Apollo output (yellow) can be seen on the HELCO system frequency (dark blue). When the Apollo output is reduced and made steady through application of a curtailment control, after time 10:30, the system frequency becomes more stable.

In the minute-to-minute time scale, sustained ramp events which may involve one wind plant, or a combined drop from both wind plants, have at times resulted in significantly low frequencies, as illustrated in the following figure:

#### WIND RAMP EVENT APR 2008 6:30-7:30 am

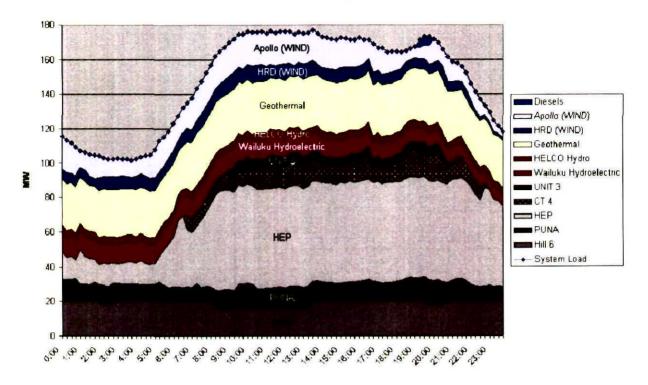


### Figure 2

This event occurred during the time of the load ramp. The time scale begins at 6:30 am. The output of the Apollo facility (labeled Kamao\_WF) drops from 10 MW to zero within three minutes. At the same time, the output of the HRD wind plant drops more gradually by 3 MW. The combined 13 MW decrease, occurring at a time of load increase resulted in frequency decline near 59.3 Hz (dark blue). The system operator recovers the system balance and frequency by starting diesel units (royal blue). Load shedding begins at 59.0 Hz. Distributed generators connected with minimal IEEE 1547 protection settings disconnect at 59.3 Hz.

Accommodation of the intermittent generation, which is taken ahead of dispatchable generation as long as the system can accommodate the energy, with consideration of minimum load and must-run units, has resulted in excess energy conditions during lower-demand periods. During these periods, responsive generation is at a minimum and variable generation is often curtailed. In this configuration the HELCO system is susceptible to over-frequency conditions as there is limited ability to respond to loss-of-load events. This is illustrated in the following figure:

July 24 2008 Dispatch



### Figure 3

This illustrates the generators providing energy through the 24 hour period July 24, 2008. The units in grey provide droop response and frequency regulation. During off-peak hours, only HEP, Puna and Hill 6 provided these services necessary for stable system operation through faults and to balance generation and load. These units were reduced near their minimum dispatchable output to accommodate renewable energy from wind, hydro, and geothermal resources, with consideration for a minimum amount of regulating down reserve.

In the past few months, a significant number of customer-sited PV projects have been connected to the HELCO system. Some of these projects are small residential projects, some under net energy metering ("NEM"), and others are commercial projects. These projects are connected to the distribution system and are not telemetered. As illustrated in the following figure, PV systems can be highly variable:



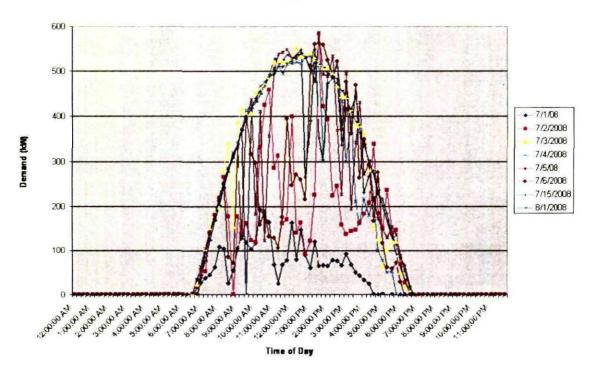


Figure 4

An illustration of the variability of output from a PV installation in West Hawaii for eight different days. The data was collected at 15 minute intervals over 24 hours for each day.

The result of these types of increases in variable generation has resulted in both HELCO and MECO experiencing very real system issues. Both utilities have a frequency bias of 2-3 MW/0.10 of Hz. This means that an increase of 2-3 MW affects the System Frequency by 0.10 Hz. As of February 2008, HELCO has approximately 5.8 MW of distributed generation on its system (not including four 1-MW utility-owned units installed at distribution substations), with another 4.1 MW planned to be installed in the near future. All of the existing distributed generation units were installed using the minimal interconnection requirements specified by the IEEE 1547 standard which states that the generating facility be equipped with protective equipment designed to automatically disconnect the generating facility from the utility distribution system when the frequency at the Point of Interconnection deviates outside the

normal operation range of 59.3 – 60.5 Hz. The result is that a loss of generation, such as has occurred from a sustained ramp down in output from a wind plant on the HELCO system, can result in the HELCO system frequency excursion that causes generation connected according to the minimal IEEE guidelines to disconnect, quite likely resulting in a drop of frequency to 59.0 Hz and under frequency load shed. To mitigate the impact of existing and near-term distributed generation (DG) projects connected according to minimal IEEE 1547 guidelines, HELCO has requested that larger DG installations utilize expanded ride-through capabilities that coordinate with the utility's under frequency load-shed scheme. However, technical limitations associated with commercially available equipment make this infeasible for smaller systems, such as residential solar projects typical for NEM. The MECO system has the potential to experience this same effect although distributed generation penetration is not as high on the MECO system as on HELCO's.

## Frequency Bias

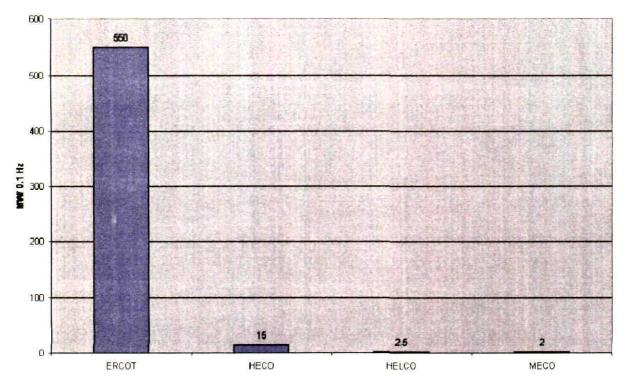


Figure 12

This chart shows the relative sensitivity to power imbalances in the Texas interconnection (ERCOT), HECO, HELCO and MECO systems as measured by the average frequency bias. The frequency bias indicates the amount of power imbalance in MW required for a 0.1 Hz change in frequency. ERCOT is the smallest interconnection in the mainland U.S.

The HECO system carries 180 MW of spinning reserve and accordingly the system stability issue described above is not as prevalent on the HECO system. Therefore, it is reasonable to allow for a higher FIT project limit for resources on this system taking into account the current resource mix on the system. A detailed examination of the HECO distribution system supports the 500 kW limit contained in the FIT Proposal. In evaluating appropriate limits for the HECO system, HECO engineers reviewed the Company's 12 kV feeders (which is the level where most of the FIT resources would interconnect). Load on those circuits ranges from 400kW to 13 MW. The 400 kW circuits exist in areas where there may be a potential for distributed

generation such as in the airport industrial area. Thus a project size of 500 kW on one of the existing 400 kW circuits will immediately require modification to the protection schemes on those circuits.

Additionally, the average load on a 12 kV HECO circuit is 2-3MW. Thus a 500 kW project would represent approximately 20 percent of the load which is a significant amount of the load on the average circuit. Put another way, increasing the proposed limit up to 5 MW as some in this proceeding have proposed would result in the potential generation on a circuit being almost twice the amount of the corresponding load on that circuit which would require modification to the protection schemes and voltage regulating equipment on those circuits. While it is possible to implement these types of modifications, they should not be undertaken without a demonstrated need or without an appropriate evaluation of the cost relative to the resource to be added – factors which are considered as a part of the utility's other procurement mechanisms for projects of this size.

HECO system operators use a combination of automatic voltage regulating equipment installed in the field on a circuit (i.e. load tap changers, capacitor banks, etc.) or actions the system operator performs using the Energy Management System (EMS) to adjust voltages throughout the day. Customer load is not constant through all hours of the day and as the customer load changes, voltages and currents through the distribution circuits will change. The automatic devices in the field and the actions of the HECO system operator using EMS control serve to manage the voltages within tariff levels. Typically, the HECO system operators are concerned about high voltage conditions where generation is injected to the distribution system. Under the current design of the HECO system, the substation transformer controls the voltage using load tap changers. The tap changers are designed for relatively slow operation (in the

minutes to hour time frame) because customer load on the distribution system typically experiences slow changes over time. By incorporating a variable generating resource such as PV on the distribution feeder, the tap changer may need to operate in the seconds time frame resulting in considerable wear and tear and the likely need to replace the infrastructure. Even in a situation where the FIT resource could install expensive solutions to regulate the voltage at the point of interconnection, a study would be required to determine if the FIT resource's voltage control system will coordinate with the HECO-designed voltage control system. Absent confirmation that the voltage control systems will work together, a possible result is that the voltage control resources will work against each other creating unacceptable voltage oscillations on the system.

While it is possible to integrate larger sized projects on the HECO and other island systems, this requires appropriate analysis and resource and system modifications to address technical issues and ensure that reliability is not adversely impacted. This level of study and modification is not well suited to the standardization of procedure that is desired as part of a FIT design which seeks to simplify and expedite the interconnection and contracting processes.

Accordingly, it is necessary as part of an initial FIT design to incorporate reasonable limits on project size and system penetration. As FIT resources are added on an incremental basis, the impacts, both positive and negative, of these resources can be evaluated to determine and plan for the infrastructure and operational modifications that are necessary to responsibly integrate even higher levels of FIT resources in subsequent updates to the FIT program.

3. Limits On Both Eligible Technologies And Project And System Limits May Be Adjusted During The FIT Update Process Based Upon Program Experience And The Ability Of Each Island System Grid To Accept Additional Resources Based Upon Improvements To The Grid.

The FIT Proposal is intended as an interim starting point for what will eventually become a broad tariff offering to as many renewable technologies as is feasible. For the reasons described herein, the proposed FIT initially focuses on a subset of technologies and projects. The FIT will be regularly reviewed for the purpose of updating tariff pricing, applicable technologies, project sizes, and annual targets ("FIT Update"). A FIT Update will be conducted for all islands in the HECO Companies' service territory and is intended to be completed not later than two years after initial implementation of the FIT. Thereafter, the FIT Update will be conducted every three years, incorporating inputs from the Clean Energy Scenario Planning ("CESP") process.

The FIT Proposal <u>initially</u> targets renewable resources that (1) do not require complex environmental and land use permitting which may impose significant uncertainties in project development timeframes and costs; (2) do not typically, by virtue of their operating characteristics and size relative to the utility system, require extensive and lengthy interconnection studies or the need for significant interconnection requirements; (3) do not trigger complex financial accounting issues relative to utility power purchase contracts, and (4) have already been, or are currently in the process of being, implemented in Hawaii in commercial (non-R&D) applications. The HECO Companies and the Consumer Advocate would consider additional technologies for the initial FIT, such as biomass or biogas technologies, to the extent that information to support inclusion of such projects is provided during the course of this proceeding.

Annual installed capacity targets, both at the project and system level, will be regularly updated in the course of the FIT Update based in part upon the experience with integration of FIT resources achieved through the initial FIT and evaluations of the additional amounts of FIT

resources that can be integrated given improvements and modifications to system infrastructure.

Among other things, the targets will be based on both technical and non-technical considerations including the following:

Renewable portfolio standards ("RPS") requirements. The Hawaii RPS requires the HECO Companies to obtain 20 percent of net electricity sales from renewable electrical energy by 2020. The HCEI Agreement proposes to increase the RPS renewable generation requirement to 40 percent by 2030. The FIT will serve to incent the installation of renewable generation at an increased rate.

The goals of the HCEI. The overarching objective of the HCEI is the "economic and culturally sensitive use of natural resources to achieve energy supply security and price stability for the people of Hawaii, as well as significant environmental and economic opportunities and benefits." A FIT will act to allow for the economic development of the State's abundant renewable resources, which will provide both environmental and economic benefits by reducing reliance on expensive, imported fossil fuels.

Technical attributes of the resources. Higher annual FIT quantity targets can be set for FIT systems that support reliable grid management such as low-frequency ride through, the ability to provide reactive power, and the ability to be curtailed or dispatched by utility system operators.

Characteristics of the utility systems being interconnected. Certain HECO Companies are able to incorporate more FIT generation than others due to variations in the size and robustness of the transmission and distribution grid and the differences in customer load among the islands. The annual quantity targets will be designed to account for these differences.

Cumulative amounts of installed variable resources. Setting of the annual FIT quantity targets for each island must consider the cumulative amount of variable generation that is installed island-wide, including via resource acquisition mechanisms besides the FIT. As discussed herein, certain HECO Companies already have a significant level of RPS-eligible and distributed generation capacity and may have correspondingly less ability to incorporate higher levels of FIT-eligible resources. HELCO, for instance, already receives over 30 percent of its energy from RPS-eligible resources, with an increasing level from distributed generation resources. The large penetration of variable, non-dispatchable generation has resulted in fewer generating units on-line providing grid stabilization and frequency regulation, reduced island system stability, and greater frequency swings due to the variable generating output from wind and PV technologies. Curtailment of renewable generation at HELCO and MECO is already occurring at times to maintain system stability.

There is a need to establish high level cumulative system targets for intermittent generation by island to avoid system stability issues and reduced system reliability. The cumulative system capacity targets should include all variable generation including independent power producers, net energy metered systems, and FIT systems that will contribute to island system stability issues. The high level cumulative target settings by island will be incorporated and regularly updated in the CESP process. The annual FIT quantity targets will take this into account when the data becomes available. In the interim, to manage this issue for those island systems that are already highly sensitive to adding more variable resources such as at HELCO, the initial proposed FIT will target resources with grid-friendly features.

Impacts on curtailment of as-available energy from existing resources. Both HELCO and MECO already curtail generation, including renewable energy generation, in order to

maintain system reliability, such as during times of high wind generation at minimum system load periods. Adding additional variable generation via the FIT that is not controllable may increase the amount and frequency of existing renewable generation that is curtailed. The annual FIT quantity targets and requirements for curtailment of certain types of FIT resources must take this into account.

Projected energy production levels. The HECO Companies and the Consumer Advocate have agreed to initially limit the FIT to a subset of RPS-eligible technologies in part because these technologies are already, or are in the process of being, implemented in Hawaii in commercial applications. Therefore, projected energy production levels from these FIT-eligible resources can be made with greater confidence that the energy will in fact be produced to meet ratepayer needs. There is greater uncertainty as to whether the energy from technologies that have not been deployed commercially in Hawaii, or are at a more R&D stage than other technologies will in fact materialize. Because of the proposed quantity and size targets and queuing process for interconnection, it is necessary to ensure that the projects are likely to materialize. Waiting until the first FIT Update to add additional technologies will allow time for more information on cost and projected energy production levels to be gathered and increase the likelihood of successfully implementing the FIT as well as the generation technologies coming on-line.

Ratepayer impacts. Annual FIT quantity targets should consider the total amount of FIT program costs from year to year and the resultant impacts on ratepayers. Consideration of ratepayer impacts should also take into account ratepayer impacts from other resource acquisition mechanisms. This is discussed in more detail below.

Impacts on utility credit ratings. Power purchases may affect the HECO Companies' credit rating, as the credit rating agencies view these purchases as potential debt for the HECO Companies. Should the HECO Companies' credit ratings be lowered for any reason, financing costs for the HECO Companies may increase. Therefore, the ability of the HECO Companies to purchase generation from third parties without affecting the HECO Companies' credit rating will affect the determination of annual capacity targets for the FIT. Imposing an annual FIT quantity target, plus the HCEI agreement to include 10% of the utility's purchases under the feed-in tariff in rate base through January 2015, will help mitigate this issue.

Administrative resource requirements. Deploying the FIT will require the HECO Companies to process FIT applications, conduct Rule 14.H interconnection reviews, and otherwise administer the tariff. The annual FIT quantity target will aid in managing these administrative resource requirements.

Other policy goals including the desire to provide fair opportunity to multiple developers or to encourage development of certain market segments, for example, residential and small commercial PV. How the FIT is designed will determine whether or not residential and small commercial PV systems can get a reasonable portion of the market share. Specific elements of the FIT should facilitate the development of these markets. These elements include quantity targets, interconnection requirements, and eligibility among others.

4. The HECO Companies Are Undertaking Significant Efforts To Facilitate The Integration Of Intermittent Resources On The Island Systems.

It must be noted here that the HECO Companies have already undertaken significant measures to improve their ability to effectively integrate existing and new variable generation on the island systems. These efforts include but are not limited to: 1) modifications to the HELCO

and MECO AGC to reduce the responsiveness of the system to short-term fluctuations in power output of as-available generation to avoid overcompensating for these types of fluctuations; 2) modifications and tuning of the control systems for HELCO and MECO generating units to increase their responsiveness to respond to fluctuations in as-available generation output; 3) increasing the regulating reserve carried on the HELCO grid to provide greater upward ramping capability of online generators to respond to sustained drop offs of as-available generation; 4) HELCO transmission projects which have increased east-to-west transmission capacity that also allow for greater operating flexibility of dispatchable generation to reduce excess energy and curtailment of as-available generation; 5) HELCO has conducted a system stability study to define the minimum amount of steam generation (generation with higher rotational inertia) that are required to run at all times to ensure the stability of the system during typical emergency events such as transmission system faults. This allows HELCO to better understand and quantify the amount of wind and PV energy (with very little to no rotational inertia) that the system can reliably accommodate; 6) greater capability changes to the commitment schedules and dispatch of MECO generation on Maui to reduce instances of excess energy and as-available curtailment; 7) increasing the regulating reserve carried on the Maui grid to provide greater upward ramping capability of online generators to respond to sustained drop offs of as-available generation; and 8) the construction of CIP CT-1 on the Oahu system which will provide greater ramping capability from firm, dispatchable generators which will increase the ability of the grid to respond to fluctuations in power output from as-available generation.

Moreover, going forward, all three of the HECO Companies are undertaking system studies to better understand what additional modifications are needed in operating practices and existing generation and T&D equipment, as well as the types and attributes needed from new

demand response programs and generating units in order to increase the grid's ability to integrate as-available generation. For example, the Oahu "big wind" implementation studies have commenced with the signing of the HCEI Agreement and are scoped to provide technical and operational solutions to the integration of grandfathered (from the Competitive Bidding Framework) as-available renewable IPP proposals, up to 100 MW of renewable IPP projects from the RE RFP, and up to 400 MW of wind energy imported from Molokai and/or Lanai. As part of these implementation studies, similar to what was studied on the HELCO grid, HECO is commencing with a system stability study to define the minimum amount of high rotational inertia generation that is required to run on the system at all times to ensure the stability of the system during typical emergency events such as transmission system faults. Additionally, HECO is currently testing their existing generators and reviewing what changes or modifications can be done to make the units more responsive to variable generation (i.e. higher ramp rates, variable ramp rates). These implementation studies are planned for completion at the end of the first quarter of 2010. MECO has initiated its own separate wind integration study that will analyze similar wind penetration percentages on the Maui grid as compared to the Oahu "big wind" implementation study. In addition, HELCO is initiating a study to research and develop wind forecasting capabilities that can predict periods of higher risk for large and rapid wind ramping events using available meteorological data available for the Hawaii Island system.

Although the HECO, HELCO, and MECO systems are making efforts to accommodate these variable generation resources while mitigating negative impacts on reliability and cost, ultimately each islands' power system will require generation which provides grid services such as frequency regulation, load following, inertial response, and other critical operating capabilities. Thus in the overall planning of the generation system, renewable energy resources

able to provide these types of benefits are a necessary part of the overall goal for reaching the maximum amount of renewable energy on the power systems. Variable generation resources can comprise a greater part in the energy supply if variable generation is coupled with supplemental capabilities in order to provide characteristics similar to those provided now by conventional generation.

# 5. The Proposed Limits On Installed FIT Resource Capacity Assist In Mitigating The Need To Curtail Resources For Grid Reliability Purposes.

As discussed above, the island nature of the HECO systems means that there is no export outlet for excess energy and accordingly, in cases where excess energy is present on the system, curtailment is required. The annual FIT quantity targets and requirements for curtailment of certain types of FIT resources must take this into account.

The inclusion of possible curtailment impacts on energy production in the FIT pricing warrants consideration. As noted in the response to discovery in this proceeding (HDA/HECO-IR-1), the HECO utilities anticipate that the FIT rate for certain resources may include a slight upward adjustment to account for the possibility of reduced energy sales under tariffs that allow for curtailment (See section 3.5.2 of KEMA report, page 25, attached to the December 23, 2008 filing). However, as described in HDA/HECO-IR-1, estimating curtailments would be a complex problem and could not be done accurately. The estimate would require extensive modeling. It would involve several uncertainties, including estimations of the anticipated energy production, future system demand, future generation additions which might contribute to curtailments, and other system conditions. In addition, the consideration of possible curtailments in pricing would result in an unintended consequence of encouraging resources to come online with anticipated hours of non-production (which are compensated) because the output of the

resource is not correlated with the system demand. The price paid would not reflect the true value of the energy to the system and consumers. Compensation for curtailment takes away the natural disincentive for adding excessive amounts of must-take energy to a system that will occur if the producer bears the costs of curtailment (through reduced sales). If curtailments are anticipated to be significant, then it is a clear indication that there is an excess amount of that type of energy on the power system or it is producing at the wrong time of day. The issues of excessive must-take energy extend beyond increased costs for the ratepayer; another result is a less responsive power system that is more at risk to failure following disturbance, as it is constrained towards minimum dispatch on the responsive generation which reduces the ability of the system to respond to loss of load events.

Therefore, it is recommended that any compensation to suppliers for potential curtailments be limited for these reasons. The need for curtailment for excess energy can be mitigated in a larger sense through targeting appropriate generation additions and limiting certain types of energy to avoid contributing must-take production during excess energy periods.

In addition, if the FIT concept is properly limited to smaller projects that do not present integration issues, then the issue of curtailment during excess energy periods can be minimized. Perhaps oversimplifying the issue, as-available energy IPPs can be curtailed (or their output can be interrupted) due to: (1) system problems, (a) caused by specific as-available energy facilities failing to comply with power quality (or performance) standards; or (b) caused by intermittent energy in general - excessive frequency fluctuations; (2) grid constraints, (a) e.g., the line through which the IPP is interconnected to the grid is de-energized for service; or (b) e.g., the line through which the IPP is interconnected to the grid incurs a forced outage; and (3) excess energy situations.

In the case of (3) and perhaps 1(b), curtailment generally is implemented, by contract, in reverse chronological order. In order to do this, there has to be a mechanism to institute and remove curtailment. In recent and new PPAs, that mechanism is a curtailment control interface (with older PPAs, it may be done through a telephone call.) The PPA provisions to do this are far more extensive than those in the proposed feed-in tariff contract, which generally relies on disconnection. Thus, as noted in the response to HRD/HECO-IR-4, there are small, essentially "non-curtailable" resources, such as residential PV systems, for which installation of curtailment equipment may not be technically or economically feasible.

If the FIT projects are small, and the amount is limited each year, an argument might be made that the projects generally should not be subject to curtailment during excess energy situations (unless absolutely necessary). The Commission would have to agree that such small generation projects (such as Feed-in Tariff projects, etc.) that are allowed to be installed without curtailment controls would not be curtailed before other as-available energy IPPs (including existing IPPs) because it is not practical. However, the impact on existing IPP's, and on projects currently under development in a difficult financing environment, of such a policy would have to be considered.

A third method to address the issue is to address the payment rate prospectively to take into account the level of curtailment experienced in the past, to the extent that the experienced curtailment exceeds some expected threshold. This "make whole" method would be difficult to administer in practice, and would not address the issues of encouraging the "wrong" projects discussed above. In addition, curtailed energy can only be estimated, it cannot be "measured". For example, the calculation of estimated curtailed energy for a wind farm is complicated, and requires extensive, time-sensitive data.

C. The Benefits To Be Achieved By The Program Must Be Appropriately Balanced Against The Costs To Ratepayers – Both Short Term And Long Term.

A goal of the FIT Proposal is to provide reasonable incentives to cost-effective renewable energy providers while balancing costs to ratepayers. In addition, technical issues must be addressed appropriately in the design of the FIT to ensure that system reliability is maintained. For example, and as discussed above, there are presently challenges on the HELCO and MECO systems to maintain stable system frequency due to the variability of intermittent generation and displacement of generation performing critical grid services. For all HECO, HELCO, and MECO systems, the technical challenges associated with integration of variable generation increase as the grid penetration level of these resources increases.

Given the desire to ensure that the rates established in the FIT for the various renewable technologies and size of technologies are reasonable, the HECO Companies propose the first phase of the FIT should target those renewable energy technologies with a proven track record in Hawaii and with known cost data. This will help to ensure that the rates established for the FIT are reflective of the cost of generation plus a reasonable profit, and help to maintain system reliability given that the impacts of the operating characteristics of the technologies on the utility's system are somewhat known. The FIT should be regularly reviewed to encompass more technologies and adjust rates if necessary, and propose to do so within two years of the initial FIT, with ongoing reviews every three years thereafter.

The HECO Companies propose annual FIT targets on installed capacity by technology and size ranges. The annual targets should be based on various considerations including rate payer impacts and orderly introduction of renewable resources which will allow each island

system operator to monitor the impact of additional renewable resources on operating the system to maintain system frequency and system reliability. The HECO Companies have not yet determined technology specific annual FIT targets for each island for each year, given the numerous factors to consider in setting annual FIT targets described in Section 3.6 of the KEMA report. However, in considering an appropriate structure for this determination, HECO Companies could envision that at least for the initial two years of the FIT, annual FIT targets could be set for each eligible technology type primarily based on (1) providing reasonable opportunity to the market, including accommodation to the extent possible of at least the amount of historical activity for the most recent year, (2) providing enough of an experience base to allow the first FIT update to be done in an informed fashion, and (3) being administratively manageable to the utility, the Consumer Advocate, and the Commission given the ramping up of a new program involving numerous contracting processes, interconnection reviews, and management of power purchase payments.

As discussed briefly above, this is consistent with the directives contained in the Commission's Scoping Paper:

Overall caps on the amount of electricity purchased under PBFiTs are reasonable to consider, as the above-market price paid for electricity under a PBFiT places upward pressure on the retail price for electricity. \*\*\* A regulator may want to consider the total impact the Clean Energy Infrastructure Surcharge (CEIS) has on retail rates, not just the impact of the PBFiT purchases when setting a cap. Caps could be set so that when a utility meets its RPS goal, PBFiTs are not available to additional projects. Caps can also be placed on installed capacity, expected production, or rate impact (e.g., the difference between the purchased cost made under a PBFiT rate and an avoided-cost rate compared to total retail revenues).

(Scoping Paper at 8)(Emphasis supplied)

Particularly relevant to the establishment of rates in this proceeding, the Scoping Paper suggests that the Commission "make clear to all parties that without credible cost and operating data for a technology, the Commission cannot responsibly establish a PBFiT for that technology." (Scoping Paper at 9) Additionally, the Scoping Paper directs that:

In developing the cost support for a PBFiT, a regulator should examine typical costs and operating characteristics for that type of project, rather than the costs and characteristic of a single particular project using that technology. PBFiTs are meant to encourage reasonable projects (i.e., those that are at least as cost-effective as the typical project) rather than any project regardless of its costs. All cost and operating estimations should, however, be Hawaii-specific to the extent that Hawaii's unique geography affects cost.

#### (Scoping Paper at 6)

The Scoping Paper also discusses the fact that the "Commission must receive from the parties, especially developers, and assess for accuracy estimates of the typical cost of each technology if capital is to be efficiently attracted and extra costs are not to be borne by customers." (Scoping Paper at 5)(emphasis supplied) Accordingly, no specific tariff pricing is proposed at this time, as the HECO Companies and Consumer Advocate believe that data received in this proceeding, and through appropriate processes directed by the Commission to determine pricing, can be used to develop more accurate and geographically relevant tariff pricing. The HECO Companies and the Consumer Advocate, as stated in the HCEI Agreement, support FIT rates that are designed to cover the producer's costs of energy production plus reasonable profit.

Furthermore, the HECO Companies and the Consumer Advocate agree that tariff pricing should differentiate between technology type, project size, and location, and should be based on the costs of developing a "typical" project that is reasonably cost-effective. In this manner, the FIT payment rates will not encourage development of generation that is not cost-effective,

consistent with the Commission's policy on distributed generation stated in Decision and Order No. 22248 in Docket No. 03-0371. Generally, project cost-based energy payment rates are established based on a target internal rate of return ("IRR"), knowledge of project and generation cost information, and energy production. Ultimately, the Commission must make a determination as to an acceptable target IRR. The HECO Companies and the Consumer Advocate propose that FIT pricing be reviewed in the course of the FIT Update, and that an independent consultant be used to compile information and make recommendations on assumptions for the costs of generation and energy production levels. The Commission must also issue a determination concerning the ability to establish FIT energy payment rates above avoided cost.

Finally, while appropriate grid improvements will be required to accommodate a higher level of FIT resources, particularly on the more constrained island systems, assertions that the utilities should undertake any and all improvements required to accommodate FIT resources regardless of ratepayer impact should be carefully examined. The goal of increased renewables, including through a FIT program, must be appropriately balanced with the impact on ratepayers. The FIT Proposal facilitates this goal by integrating FIT resources, and the infrastructure required to support those resources, on an incremental basis which will allow the utilities to mitigate the impact on ratepayers while achieving the State's renewable resource targets. Moving forward in a measured and responsible way also preserves for the utilities and the Commission the flexibility to secure renewable resources which may provide renewable energy at a lower cost, together with the grid benefits that will allow the utilities to accept greater levels of renewable resources, for the ratepayer.

# 1. Benefits From The Renewable FIT Resource Should Flow Through To The Ratepayer.

Under the FIT Proposal, the utility would be acquiring electrical energy plus associated environmental attributes. The utilities' purchase of the renewable energy is driven in large part by the utilities' obligations to acquire renewable energy, such as to meet statutory RPS requirements. Under the proposed FIT pricing methodology, the FIT resource receives a bundled FIT energy payment that provides a targeted internal rate of return. The HECO Companies and Consumer Advocate propose that FIT energy payment rates be based on providing the FIT resource a reasonable profit on their investment. The methodology to establish the FIT payment rate will involve (1) a Commission determination on the targeted internal rate of return, and (2) establishing the cash flow elements, both positive and negative, for a project over the term of the FIT contract. The energy payment rate will then be adjusted accordingly until the target internal rate of return is reached. For a given internal rate of return, if a renewable energy credit ("REC") payment to the developer is included in the cash flow, the energy payment rate would be lower than if there was no separate REC payment line item in the cash flow. In other words, the utility, if separately purchasing the REC from the developer, would correspondingly lower the FIT energy payment rate so that the bottom line internal rate of return to the developer will be the same. Any environmental credit associated with renewable energy purchased by the utility from the developer would be the property of the utility, provided, however, that such environmental credits should be to the benefit of the utility's ratepayers in that the value should be credited "above the line."

2. Available Tax Credits Should Be Appropriately Factored Into FIT Pricing For The Benefit Of The Ratepayer.

Investment and production tax credits should be considered as positive cash flows to the developer when conducting a discounted cash flow analysis to determine the FIT energy payment rate. As described in Section 3.5.2 of the KEMA Report, the HECO Companies and Consumer Advocate recommend using a model that uses a Discounted Cash Flow (DCF) analysis methodology to assess such nominal levelized feed-in tariff rates based on the cost of generation plus a target return on investment (ROI), or Internal Rate of Return (IRR), for the project over the life of the system. The base rate represents, for a project coming on line in a given year, a nominal levelized payment stream that has the same net present value (NPV) as the projected stream of costs and capital flows that provides the target IRR to project owners. This approach is similar to the more simplified Levelized Cost of Energy (LCOE) methodology commonly used for analysis of electricity generation costs. The LCOE is a measure of total costs of a system (over its expected lifetime) divided by the expected energy output (over its useful lifetime), with appropriate adjustments for the time value of money. The LCOE provides a useful mechanism to compare the cost of energy across different technologies. On a simplified basis, LCOE is the net present value of total life cycle costs divided by the quantity of the energy produced over the life of the project.

The DCF approach accounts for a comprehensive set of financial cash flow and tax inputs as well as performance characteristics in a financial model over a specified period of time. The analysis considers cash flows over the project's assumed economic life. If the contract duration is shorter than the assumed economic life, assumptions must also be made about the residual revenue stream for the remainder of the project economic life. The inputs that go into the DCF analysis include: (1) capital costs, (2) project performance, (3) initial development costs including engineering, permitting, environmental, management, legal, accounting, and

contracting costs, (4) financing costs and cost of capital, (5) ongoing costs including fixed and variable O&M expenses, fuel costs (if any), replacement parts, land lease costs, insurance, state and Federal income taxes (including the tax effects of depreciation), property taxes, excise and all other applicable taxes, (6) applicable Federal and state tax or other incentives, and (7) discount rate. Using this methodology, the nominal levelized FIT energy rate can be set to cover expected costs and provide a target IRR which the Commission deems to be reasonable.

#### III. CONCLUSION

Consistent with the Commission's Scoping Paper, the FIT Proposal is intended as an interim starting point for what will eventually become a simple, streamlined and broad tariff offering to as many renewable technologies as is feasible while also allowing for the effective and reliable delivery of electrical service. For the reasons described herein, the FIT Proposal initially focuses on a subset of technologies and projects. The FIT will be regularly reviewed for the purpose of updating tariff pricing, applicable technologies, project sizes, and annual targets through the FIT Update. A FIT Update will be conducted for all islands in the HECO Companies' service territory not later than two years after initial implementation of the FIT. Thereafter, the FIT Update will be conducted every three years, incorporating inputs from the CESP process.

The HECO Companies and Consumer Advocate look forward to the panel hearings and further discussions of the FIT Proposal with the parties and the Commission and toward a cooperative dialog regarding the development of a FIT design consistent with the principles outlined in the Commission's Scoping Paper.

Dated: Honolulu, Hawaii, March 30, 2009.

JON S. ITOMURA, ESO.

LANE H. TSUCHIYAMA, ESQ.

Attorneys for

DIVISION OF CONSUMER ADVOCACY OF THE DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS THOMAS W. WILLIAMS, JR., ESQ.

PETER Y. KIKUTA, ESQ. DAMON L. SCHMIDT, ESQ

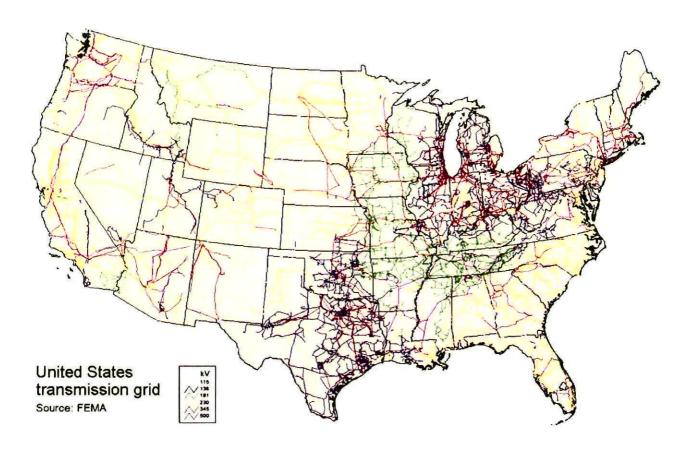
ROD S. AOKI, ESQ.

Attorneys for

HAWAIIAN ELECTRIC COMPANY, INC. MAUI ELECTRIC COMPANY, LIMITED HAWAII ELECTRIC LIGHT COMPANY, INC.

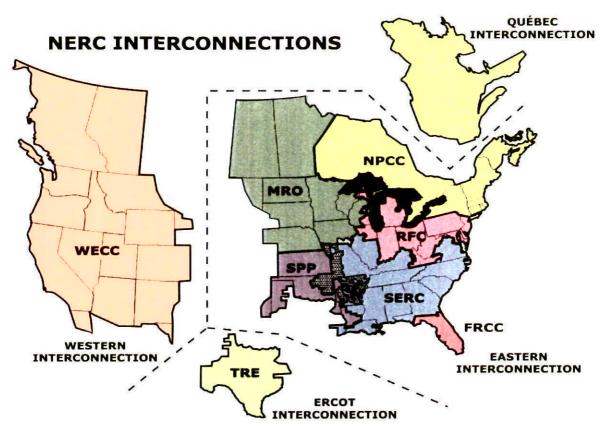
# APPENDIX A

The mainland power transmission grid consists of 300,000 km of lines operated by 500 companies:



 $\underline{\text{Figure 1}}$  - The transmission systems for the Western, Eastern, and ERCOT interconnections of the United States.

The following is an illustration of the North American Electric Reliability Council ("NERC") interconnection system.



#### Figure 2

The three North American interconnections. To ensure the reliability of the bulk power system in North America, the North American Electric Reliability Corporation (NERC) develops and enforces reliability standards. NERC is a self-regulatory organization, subject to oversight by FERC and governmental authorities in Canada.

The Union for the Co-ordination of Transmission of Electricity ("UCTE") coordinates the operation and development of the electricity transmission grid from Portugal to Poland and from the Netherlands to Romania and Greece. UCTE is an association of transmission system operators in continental Europe in 24 countries serving some 500 million people. UCTE operates one of the largest electric synchronous interconnections worldwide.

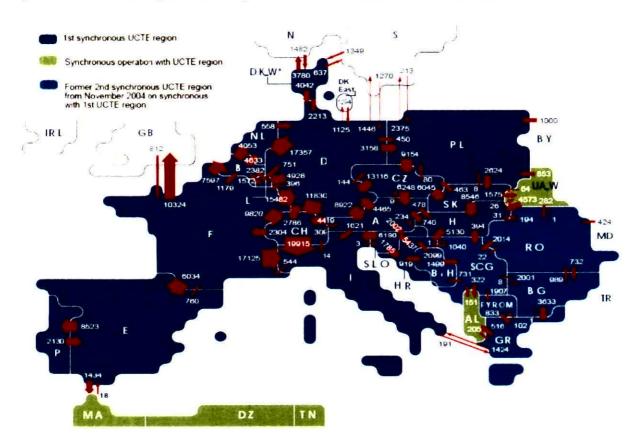


Figure 5 - The UCTE interconnection

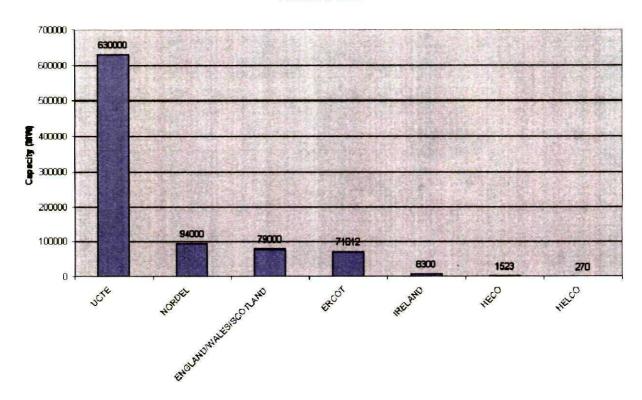
In sharp contrast, the Hawaii electric utility systems are not interconnected:



Figure 6 - The Hawaiian Islands

And are serving much smaller loads by significant orders of magnitude:

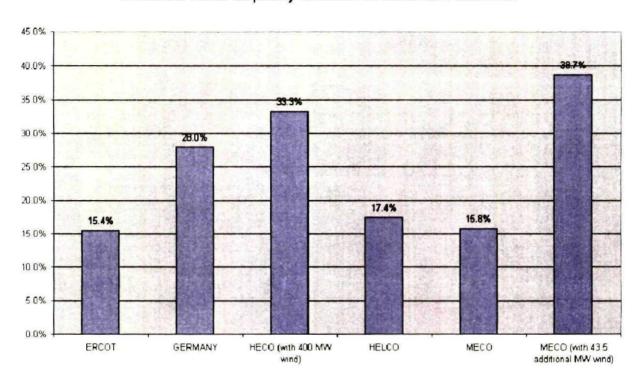
#### Relative Size



#### Figure 7

This chart illustrates the relative size of various power systems measured by the amount of installed capacity.

# Installed Wind Capacity Relative to Maximum Demand

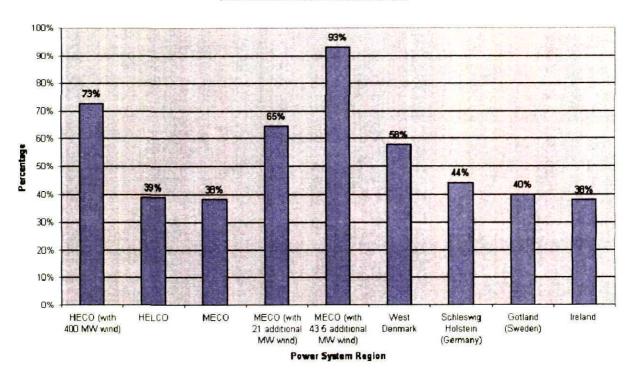


#### Figure 8

This chart illustrates the relative amount of installed wind for HELCO and MECO, relative to peak demand, as compared to the high-penetration systems of ERCOT and Germany. Also shown is the relative amount including wind additions for HECO and MECO which are under development or in the planning stages

#### Maximum Wind Power / (Lowest Consumption + Export Capacity)

\*source of data other than HECO from "Wind Power Integration in EirGrid Operating Experience", Jody Dillon, Renewables Integration Group, presented at UWG conference Fort Worth, Tx April 2008



#### Figure 9

This chart uses a measure of wind penetration utilized in the industry to compare the amount of wind capacity relative to minimum load conditions on the system, and with consideration of the export capacity (through interconnections) which can assist with system balancing. As indicated above, HECO, MECO, and HELCO have no interconnections and thus the capacity to export excess energy for system balancing purposes is zero. In addition to present values for HELCO and MECO, penetrations considering future wind additions under development or in planning are shown for HECO and MECO.

### CERTIFICATE OF SERVICE

The foregoing Final Statement of Position of the HECO Companies and

Consumer Advocate was served on the date of filing by mail, postage prepaid, and properly addressed or electronically transmitted to each such Party.

CATHERINE P. AWAKUNI
EXECUTIVE DIRECTOR
DEPT OF COMMERCE & CONSUMER AFFAIRS
DIVISION OF CONSUMER ADVOCACY
P.O. Box 541
Honolulu, Hawaii 96809

2 Copies Via Hand Delivery

MARK J. BENNETT, ESQ.
DEBORAH DAY EMERSON, ESQ.
GREGG J. KINKLEY, ESQ.
DEPARTMENT OF THE ATTORNEY GENERAL
425 Queen Street
Honolulu, Hawaii 96813
Counsel for DBEDT

Electronic Transmission

CARRIE K.S. OKINAGA, ESQ.
GORDON D. NELSON, ESQ.
DEPARTMENT OF THE CORPORATION COUNSEL
CITY AND COUNTY OF HONOLULU
530 South King Street, Room 110
Honolulu, Hawaii 96813

Electronic Transmission

LINCOLN S.T. ASHIDA, ESQ.
WILLIAM V. BRILHANTE JR., ESQ.
MICHAEL J. UDOVIC, ESQ.
DEPARTMENT OF THE CORPORATION COUNSEL
COUNTY OF HAWAII
101 Aupuni Street, Suite 325
Hilo, Hawaii 96720

Electronic Transmission

MR. HENRY Q CURTIS MS. KAT BRADY LIFE OF THE LAND 76 North King Street, Suite 203 Honolulu, Hawaii 96817 Electronic Transmission

MR. CARL FREEDMAN HAIKU DESIGN & ANALYSIS 4234 Hana Highway Haiku, Hawaii 96708 Electronic Transmission

MR. WARREN S. BOLLMEIER II PRESIDENT HAWAII RENEWABLE ENERGY ALLIANCE 46-040 Konanc Place, #3816 Kaneohe, Hawaii 96744 **Electronic Transmission** 

DOUGLAS A. CODIGA, ESQ.
SCHLACK ITO LOCKWOOD PIPER & ELKIND
TOPA FINANCIAL CENTER
745 Fort Street, Suite 1500
Honolulu, Hawaii 96813
Counsel for BLUE PLANET FOUNDATION

**Electronic Transmission** 

MR. MARK DUDA
PRESIDENT
HAWAII SOLAR ENERGY ASSOCIATION
P.O. Box 37070
Honolulu, Hawaii 96837

Electronic Transmission

MR. RILEY SAITO THE SOLAR ALLIANCE 73-1294 Awakea Street Kailua-Kona, Hawaii 96740 **Electronic Transmission** 

JOEL K. MATSUNAGA HAWAII BIOENERGY, LLC 737 Bishop Street, Suite 1860 Pacific Guardian Center, Mauka Tower Honolulu, Hawaii 96813 **Electronic Transmission** 

KENT D. MORIHARA, ESQ.
KRIS N. NAKAGAWA, ESQ.
SANDRA L. WILHIDE, ESQ.
MORIHARA LAU & FONG LLP
841 Bishop Street, Suite 400
Honolulu, Hawaii 96813
Counsel for HAWAII BIOENERGY, LLC
Counsel for MAUI LAND & PINEAPPLE COMPANY, INC.

**Electronic Transmission** 

MR. THEODORE E. ROBERTS SEMPRA GENERATION

101 Ash Street, HQ 12

San Diego, California 92101

Electronic Transmission

Electronic Transmission

MR. CLIFFORD SMITH

MAUI LAND & PINEAPPLE COMPANY, INC.

P.O. Box 187

Kahului, Hawaii 96733

MR. ERIK KVAM Electronic Transmission

CHIEF EXECUTIVE OFFICER

ZERO EMISSIONS LEASING LLC

2800 Woodlawn Drive, Suite 131

Honolulu, Hawaii 96822

JOHN N. REI Electronic Transmission

SOPOGY INC.

2660 Waiwai Loop

Honolulu, Hawaii 96819

GERALD A. SUMIDA, ESQ. Electronic Transmission

TIM LUI-KWAN, ESQ.

NATHAN C. SMITH, ESO.

CARLSMITH BALL LLP

ASB Tower, Suite 2200

1001 Bishop Street

Honolulu, Hawaii 96813

Counsel for HAWAII HOLDINGS, LLC, dba FIRST WIND HAWAII

MR. CHRIS MENTZEL Electronic Transmission

CHIEF EXECUTIVE OFFICER

CLEAN ENERGY MAUILLC

619 Kupulau Drive

Kihei, Hawaii 96753

MR. HARLAN Y. KIMURA, ESO. Electronic Transmission

CENTRAL PACIFIC PLAZA

220 South King Street, Suite 1660

Honolulu, Hawaii 96813

Counsel for TAWHIRI POWER LLC

3

#### **Electronic Transmission**

SANDRA-ANN Y.H. WONG, ESQ. Electronic ATTORNEY AT LAW, A LAW CORPORATION
1050 Bishop Street, #514
Honolulu, HI 96813
Counsel for ALEXANDER & BALDWIN, INC.,
Through its division, HAWAIIAN COMMERCIAL & SUGAR COMPANY

DATED: Honolulu, Hawaii, March 30, 2009

THOMAS W. WILLIAMS, JR.

PETER Y. KIKUTA DAMON L. SCHMIDT

ROD S. AOKI

Attorneys for HAWAIIAN ELECTRIC COMPANY, INC. HAWAII ELECTRIC LIGHT COMPANY, INC. MAUI ELECTRIC COMPANY, LIMITED